

Future Career

TeeGene Biotech Ltd.



Dr Pattanathu Rahman

**Be the change you wish
to see in the world.**

– Mahatma Gandhi



UG/PG



PhD



1st Postdoc
(Ulster Uni)



2nd Postdoc
(BNL-NY-USA)



3rd Postdoc
(CLEMANCE)



Lecturer
(Teesside)



TeeGene

TeeGene Biotech Ltd.

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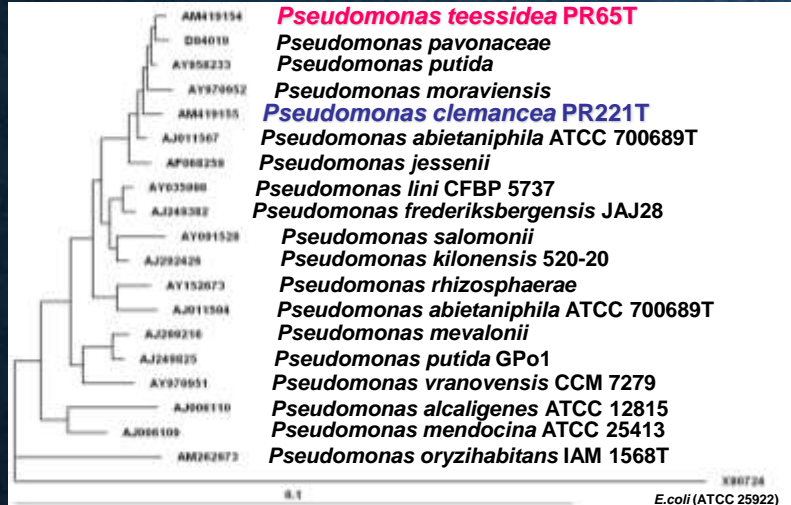


Wilton Centre



Biosurfactant Bacteria - Teesside

Culture Collection = 122 bacterial strains from Northeast England



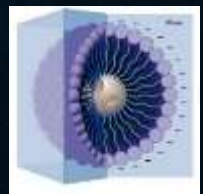
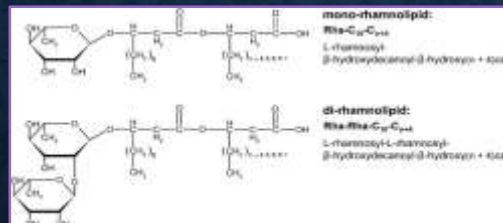
RESEARCH TO SPINOUT

- Microbial diversity in oil spilled samples
- Initially started for oil degradation study
- Foaming in the flasks triggered the idea to characterise the biochemical
- Discovered biosurfactants
- BfB KTN Funding – novel bacteria/biosurf
- Lead to the creation of TeeGene

Highly-effective biotechnology based surface-active multi-functional products

Properties:

- ❖ Non-toxic, Non-hazardous
- ❖ Thermostable
- ❖ Low surface tension
- ❖ Emulsify: wide range of hydrocarbons - Stable emulsion



Scale up of Bioprocess



BBNWE – Biosurf Scale-up



- BBNWE –BBEPP
- INTERREG IVB programme of the European Union
- TeeGene received innovation voucher and conducted feasibility studies and scale-up trials at the Bio Base Europe Pilot Plant in Ghent, Belgium.





CONDITION-SPECIFIC ENGINEERING OF PSEUDOMONAS METABOLISM

In this project, we will build a genome-scale multi-omic model of *Pseudomonas* for multi-level maximisation of growth rate and biosurfactant production through the cell membrane.



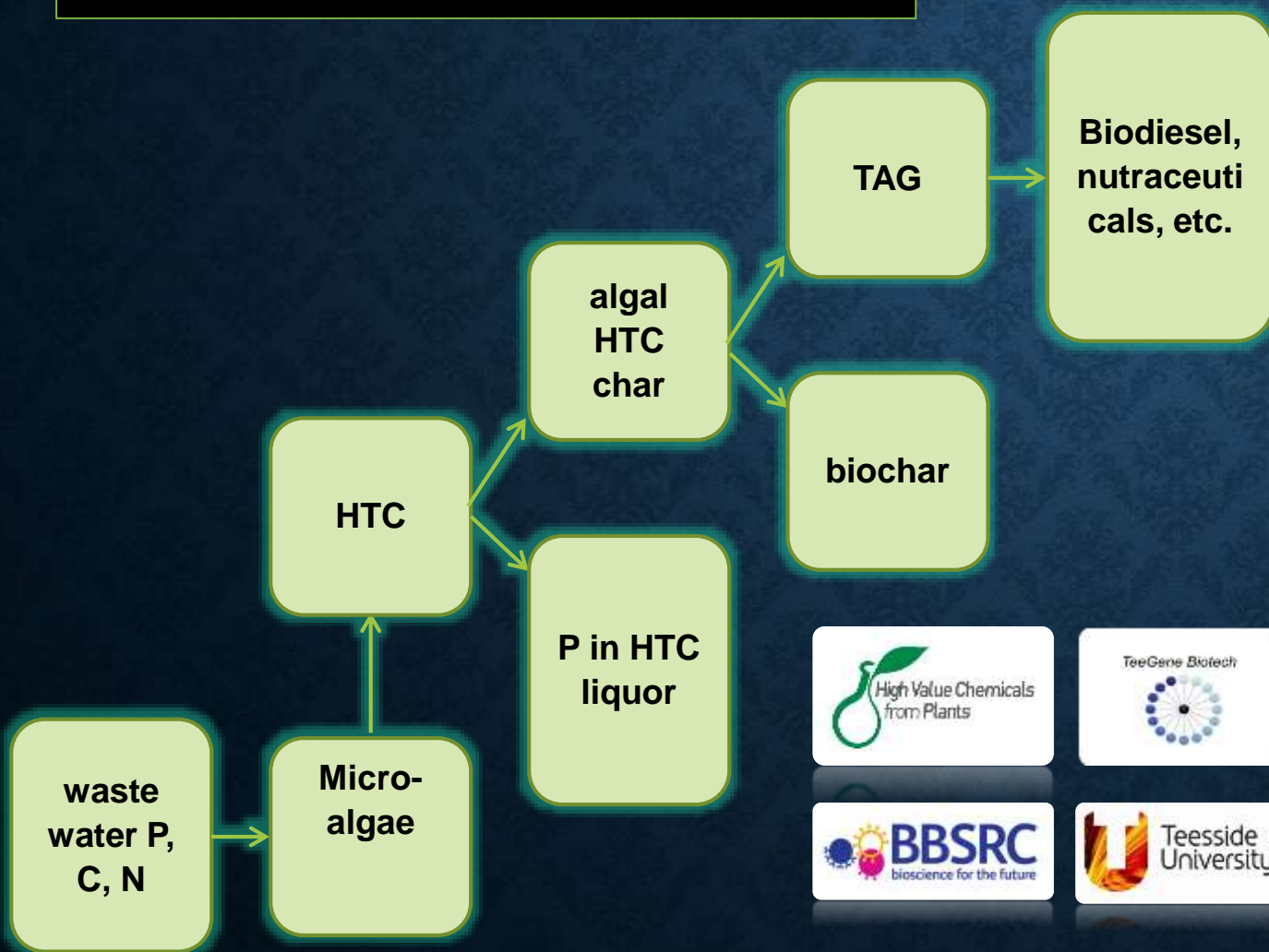
PLANTS AS NANOPARTICLE PRODUCERS

Biosurfactant mediated nanomaterial synthesis by plants and enhancement of precious metal recovery from contaminated sources.

After the phase of optimisation, plants trials will be conducted using industrial effluents high in precious metals and on road verges



ALGAL BIOREFINERY



Collaboration with New Zealand

- UK/NZ workshop on Industrial Biotechnology and Bio-Engineering
- UCL, University of Sheffield, Teesside University
- BBSRC International workshop in Aug 2017
- (CBMNet/Phyconet/British High Commission)



COLLABORATIVE LINKS

- **2017: Innovate UK delegation to India to tackle waste water issues**
- **2016: British High Commission delegation to New Zealand for Agri Biotech R&D**
- **2011: *International delegation*:** Participation of UK Prime Minister initiative sponsored CPD project on New Biofuel Technologies, Thailand
- **2010: *President*** of NEEDIL (Northeast England and Tamilnadu Network)



British High Commission



Royal Society/DST – NEEDIL



British council – UK Prime Minister's Initiative



Research



- DEFRA – Biorecycling (2005-2008)
- EU-Life-3 BIOREGEN (2007-2011)
- RS/DST biofuel conference (India) - 2015
- Prime Minister's Initiative – British Council – UK/Thai Biofuels CPD Course

Enterprise

- Enterprise project of the Year -2016
- IChemE –Best Start-up award - Runner-up
- British High Commission R&D delegation to NZ
- BBSRC Grants – 4 (BIV/POC) – (2015 – 2017)



OPPORTUNITIES FOR EARLY CAREER RESEARCHERS

- BBSRC – HVCfP – BIV: UG/PG Life Science students worked – studentships
- BBSRC – CBMNet – BIV: P/T Postdoc worked for 6 months
- BBSRC – CBMNet – POC : F/T Postdoc worked for 6 months
- BBSRC – MinB Network BIV: Graduate studentship for 6 months
- Future opportunities will be advertised through CBMNet email circulation list



Thanks

Dr Pattanathu Rahman

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And

MSc FS Biotechnology Programme Leader

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